

Reply Under 37 C.F.R. § 1.116
Expedited Procedure
Technology Center 1700

Application No.: 10/544,182
Art Unit: 1791

LIST OF CURRENT CLAIMS

1. (Currently Amended) A security paper for producing value documents, exemplified by bank notes, passports or identification documents, comprising a flat substrate provided at least partly with a dirt-repellent protective layer for extending the life time and fitness for circulation, wherein

the protective layer comprises at least two lacquer layers, a first lower one of said lacquer layers being formed by a physically drying liquid lacquer layer applied to the substrate which makes contact with the substrate therebelow and closes its pores, and a second upper one of said lacquer layers protecting the substrate from physical and chemical influences;

wherein the first lower lacquer layer is based on a water-based dispersion of aliphatic polyester polyurethanes or styrene-acrylic polyurethanes, ~~without a radiation-curing lacquer component~~; and

the second upper layer is formed as any one of the following layers a), b), or c):

- a) a radiation-curing UV-crosslinked lacquer layer;
- b) a physically drying water-based dispersion lacquer layer based on styrene-acrylic without a polyurethane component;
- c) a hybrid lacquer layer containing both physically drying components and a radiation-curing lacquer component, and based on aqueous dispersions on the basis of aliphatic urethane acrylates and acrylates with photoinitiators.

2. (Previously Presented) The security paper according to claim 1, wherein the substrate is formed by an unprinted or printed cotton paper.

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3. (Previously Presented) The security paper according to claim 1, wherein the lower lacquer layer forms a smooth and contiguous layer on the substrate.

4. (Previously Presented) The security paper according to claim 1, wherein the first lower lacquer layer is elastic so as to at least avoid cracks from forming therein through mechanical motions.

5-9. (Canceled)

10. (Previously Presented) The security paper according to claim 1, wherein the second upper lacquer layer further comprises silicones and/or wax.

11. (Previously Presented) The security paper according to claim 1, wherein the UV-crosslinked lacquer layer is based on an acrylate system.

12. (Previously Presented) The security paper according to claim 1, wherein the composition of the upper lacquer layer is selected with respect to brittleness and surface tension so as to obtain a predetermined haptics of the security paper, in particular a predetermined smoothness, and/or flexural stiffness.

13. (Previously Presented) The security paper according to claim 1, wherein the second upper lacquer layer is disposed directly on the first lower lacquer layer.

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14. (Previously Presented) The security paper according to claim 1, wherein a further lacquer layer comprising water-based dispersion lacquer is disposed between the second upper and first lower lacquer layers.

15. (Previously Presented) The security paper according to claim 1, wherein the lacquer layers of the protective layer are conditioned with each other in their adhesion properties so as to form a highly resistant bond.

16. (Canceled)

17. (Previously Presented) The security paper according to claim 1, wherein either or both the second upper and first lower lacquer layer is transparent and colorless.

18. (Previously Presented) The security paper according to claim 1, wherein the second upper lacquer layer has antibacterial fungus proofing.

19. (Previously Presented) The security paper according to claim 1, wherein the first lower lacquer layer is present on the substrate in a coating weight of from 1 to 6 g/m².

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20. (Previously Presented) The security paper according to claim 1, wherein the first upper lacquer layer is present on the substrate in a coating weight of from 0.5 to 3 g/m².

21. (Previously Presented) The security paper according to claim 1, wherein one or more of the substrate, first lower lacquer layer and second upper lacquer layer are printed with characters or patterns, and wherein in the case where the substrate is printed, the protective layer comprising said first lower and said second upper lacquer layer is applied directly to said printed substrate, and in the case where the first lower lacquer layer is printed, the second upper lacquer layer is applied directly to said printed first lower lacquer layer.

22. (Previously Presented) The security paper according to claim 1, wherein the protective layer contains at least one gap.

23. (Previously Presented) The security paper according to claim 22, wherein the gap has a security element incorporated therein.

24. (Previously Presented) The security paper according to claim 1, wherein the protective layer is applied to the entirety of the flat substrate.

25. (Previously Presented) The security paper according to claim 1, wherein the flat substrate is provided with the dirt-repellent protective layer on its two main faces.

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26. (Previously Presented) A value document, exemplified by a bank note, passport or identification document, comprising security paper according to claim 1.

27. (Withdrawn – Currently Amended) A method for producing a security paper in particular for a value document, exemplified by a bank note, passport or identification document, comprising the following steps:

- a) supplying a flat substrate;
- b) applying a dirt-repellent protective layer to the substrate, the protective layer being applied by
 - b₁) applying a physically drying liquid lacquer layer to the substrate as a first lower layer of the protective layer to make contact with the substrate therebelow and close its pores; and
 - b₂) applying a second upper layer of the protective layer to protect the substrate from physical and chemical influences;

wherein the first lower layer of the protective layer is based on a water-based dispersion of aliphatic polyester polyurethanes or styrene-acrylic polyurethanes, ~~without a radiation-curing lacquer component~~; and

the second upper layer is formed as any one of the following layers i), ii), or iii):

- i) a radiation-curing UV-crosslinked lacquer layer;
- ii) a physically drying water-based dispersion lacquer layer based on styrene-acrylic without a polyurethane component;

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- iii) a hybrid lacquer layer containing both physically drying components and a radiation-curing lacquer component, and based on aqueous dispersions on the basis of aliphatic urethane acrylates and acrylates with photoinitiators.

28. (Withdrawn) The method according to claim 27, wherein

- c) the second upper layer is crosslinked, cured and/or dried by irradiation with electromagnetic radiation.

29. (Withdrawn) The method according to claim 27, wherein the flat substrate supplied is a printed or unprinted cotton paper.

30. (Withdrawn) The method according to claim 27, wherein the first lower layer applied is an elastic material so as to at least avoid cracks from forming therein through mechanical motions.

31. (Withdrawn) The method according to claim 27, wherein the first lower lacquer layer is applied in an amount of coating which closes the pores of the substrate and forms a smooth and cohesive surface on the substrate.

32. (Withdrawn) The method according to claim 27, wherein the first lower lacquer layer is applied to the substrate in an amount of from 2.5 to 15 g/m².

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33. (Withdrawn) The method according to claim 27, wherein the first lower layer is dried prior to application of the second upper layer.

34. (Canceled)

35. (Withdrawn) The method according to claim 27, wherein the composition of the second upper lacquer layer is selected with respect to brittleness and surface tension so as to obtain a predetermined haptics of the security paper, in particular a predetermined smoothness, and/or flexural stiffness.

36. (Withdrawn) The method according to claim 27, wherein a printed image is printed on the substrate prior to application of the protective layer.

37. (Withdrawn) The method according to claim 27, wherein a printed image is printed on the first lower lacquer layer after application of the first lower lacquer layer, and/or a printed image is printed on the second upper lacquer layer after application of the second upper lacquer layer.

38. (Withdrawn) The method according to claim 27, wherein the unlacquered or lacquered substrate is printed by the intaglio printing process.

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39. (Withdrawn) The method according to claim 27, wherein the first lower and/or second upper lacquer layer is applied by a flexographic printing process.

40. (Withdrawn) The method according to claim 39, wherein the lacquer layers applied by a flexographic printing process are applied in an amount of coating of altogether 3 to 12 g/m².

41. (Withdrawn) A method according to claim 27, wherein the first lower and/or second upper lacquer layer is applied by a screen printing process.

42. (Withdrawn) The method according to claim 41, wherein the lacquer layers applied by a screen printing process are applied in an amount of coating of altogether 5 to 15 g/m².

43. (Withdrawn) The method according to claim 27, wherein the first lower and/or second upper lacquer layer is applied by the offset printing process or by the indirect letterpress printing process.

44. (Withdrawn) The method according to claim 27, wherein the protective layer is applied to the entirety of the substrate.

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45. (Withdrawn) The method according to claim 27, wherein the flat substrate is provided with the dirt-repellent protective layer on its two main faces.

46. (Withdrawn) The method according to claim 27, wherein the flat substrate supplied in step a) is a paper-of-value sheet comprising a plurality of single copies for which the steps b), b₁) and b₂) are performed in the same run in each case.

47. (Withdrawn) The method according to claim 27, wherein the first lower and second upper lacquer layers are applied to the substrate in-line in a sheet-fed lacquering machine.